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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/751,086	12/29/2000	Shigeru Yoneda	P/1909-144	5593

7590

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EXAMINER

KIANNI, KAVEH C

ART UNIT

PAPER NUMBER

2877

DATE MAILED: 02/11/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application N .

09/751,086

Applicant(s)

YONEDA, SHIGERU

Examiner

Kevin C Kianni

Art Unit

2877

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-6 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-6 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 22 January 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Inoue et al. (US 6304687).

Regarding claim 1, Inoue teaches a temperature -independent arrayed waveguide grating (shown at least in fig. 8 and 18; see col. 1, lines 10-20), comprising at least an input waveguide (see fig. 18, array 41), an input slab waveguide including an input side 44 and an output side 44 (see fig. 18, slabs 44), said input side of said input slab waveguide receiving light from said input waveguide (fig. 18, slab 44 receiving light from input waveguide 45), a plurality of arrayed waveguides including an input side 45 and an output side 45, said input side of said plurality of arranged waveguides 45 being connected to said output side 45 of said input slab waveguide 44 (see fig. 18 item slab 44, being connected to input/output waveguides), an output slab waveguide 44 including an input side and an output side (shown in fig. 18, items slab 44 and input/output side of the slab), said input side of said output slab waveguide being connected to said output side of said arrayed waveguides (shown in fig. 18, output slab 44 being connected to the output waveguide being input from the first slab 44), a

Art Unit: 2877

plurality of output waveguides connected to said output side of said output slab waveguides (see fig. 18, item output waveguide 45 is connected to the output waveguide output from the first slab 44); a wedge-shaped groove 48 formed in said arrayed waveguides (see fig. 18, item 48 and 41; col. 11, lines 33-39); and material filled in said groove (see fig. 18, item 48 and 41; col. 11, lines 33-44), said material having a negative refractive index temperature coefficient (see col. 3, lines 30-35 and col. 11, lines 33-45); wherein said material disposed in said groove confines light incident to said groove thereby preventing the light from spreading in said groove (see col. 11, lines 33-44 and col. 16, lines 27-44). However, Inoue does not specifically teach that the above confining light is confined in a horizontal direction or in vertical and horizontal directions. Nevertheless, Inoue states that the light propagates in waveguides having TE and TM modes (see col. 11, lines 25-29). It is well known to those of ordinary skill in the art when the invention was made that wherein TE and TM modes represent horizontal and vertical direction of light beams in which the light is confined in a groove the light would be confined to prevent loss of light (see col. 16, lines 26-44) in all directions, including horizontal and vertical directions; since this technique of waveguide grating would reduce the temperature dependency of the wavelength characteristic in light waveguide circuit (see col. 3, lines 7-11).

Regarding claim 2, Inoue further teaches wherein: said material filled in said groove is a photosensitive material; and difference in a refractive index is provided in said material using the photosensitivity, and optical waveguides are thereby formed in

Art Unit: 2877

said material in a horizontal direction or in vertical and horizontal directions (see fig. 37 items 11 and 12; see also abstract and at least col. 16, lines 26-44 and line 59-col. 17, line 4).

Regarding claim 3, Inoue further teaches wherein said material filled in said groove has a refractive index higher than that of material of said arrayed waveguide grating (see col. 16, line 59-col. 17, line 4).

Regarding claim 4, Inoue further teaches wherein width of each core of said arrayed waveguides is enlarged before and after said groove (see fig. 37, item waveguide 36 and groove 12; also col. 16, lines 26-44).

Regarding claim 5, Inoue further teaches wherein said material filled in said groove is a photosensitive material having a refractive index higher than that of material of said arrayed waveguide grating; and difference in a refractive index is provided in said material using the photosensitivity and optical waveguides are thereby formed in said material in a vertical direction or in vertical and horizontal directions (see fig. 37 items 11 and 12; see also abstract and at least col. 16, lines 26-44 and line 59-col. 17, line 4).

Regarding claim 6, Inoue further teaches wherein said material filled in said groove has a refractive index higher than that of material of said arrayed waveguide

Art Unit: 2877

grating (see col. 16, line 59-col. 17, line 4); and width of each core of said arrayed waveguides is enlarged before and after said groove (see fig. 37, item waveguide 36 and groove 12; also col. 16, lines 26-44).

### ***Response to Amendment***

3. Applicant's arguments filed on January 22, 2003 have been fully considered but they are not persuasive.

This examiner has carefully reexamined claims 1-6 in view of applicant's amendments and arguments.

Applicant asserts (page , 4, parag. 4-page 5, parag. 1), that Inoue does not teach/suggest light is confined in a horizontal direction or in vertical and horizontal directions. The examiner responds that although Inoue does not explicitly use the words horizontal/vertical directions in regard to light confinement nevertheless, Inoue states that the light propagates in waveguides having TE and TM modes (see col. 111, lines 25-29), in which the light is being confined in groove with material resin to prevent loss of light (see col. 11, lines 25-44 and col. 16, lines 27-44); in which it is well known to those of ordinary skill in the art when the invention was made that wherein TE and TM modes represent horizontal and vertical direction of light beams in which the light is confined in a groove the light would be confined to prevent loss of light including horizontal and vertical directions; since this technique of waveguide grating would reduce the temperature dependency of the wavelength characteristic in lightwaveguide circuit (see col. 3, lines 7-11).

**THIS ACTION IS MADE FINAL**

4. In view of applicant's amendments this action is made FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a). A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

***Contact Information***

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kaveh Cyrus Kianni whose telephone number is (703) 308-1216.

The examiner can normally be reached on Monday through Friday from 8:30 a.m. to 6:00 p.m. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Frank Font, can be reached at (703) 308-4881.

**Any response to this action should be mailed to:**

Commissioner of Patents and Trademarks  
Washington, D.C. 20231

**or faxed to:**

(703) 308-7722, (for formal communications intended for entry)

**or:**


Art Unit: 2877

(703) 308-7721, (for informal or draft communications, please label  
"PROPOSED" or "DRAFT")

Hand delivered responses should be brought to Crystal Plaza 4, 2021 South  
Clark Place, Arlington, VA., Fourth Floor (Receptionist).

Any inquiry of a general nature or relating to the status of this application should be  
directed to the Group Receptionist whose telephone number is (703) 308-0956.

Kevin Cyrus Kianni  
Patent Examiner  
Group Art Unit 2877

  
Frank Font  
Supervisory Patent Examiner  
Group Art Unit 2877

February 5, 2003